SEQUENCE LISTING

#5

<110> Weber, Bernard H.F.
        Stoehr, Heidi

<120> Novel retina-specific human proteins C7orf9, C12orf7, MPP4 and F379

<130> 033488-001

<140> US 09/995,793
<141> 2001-11-29

<150> 60/253,751
<151> 2000-11-29

<160> 71

<170> PatentIn version 3.1

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<220>
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<223> artificial sequence, Translation start at 209; stop at 2435

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<213> Homo sapiens

<220>
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accaggactc cttttctaga ccagaaagta atatcacctc tgacatgtga tcaaatgaat    420
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<212> DNA
<213> Homo sapiens

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<223>  genomic DNA, Exon from 165 to 286

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gaggcttgtg ctgcaagagc tgagtctgtt ctacagcaga gatgtgaatg gagtgtgtct   240
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gctcggaagc ctttgcttgc tgaagggggtt gtggggagtg tgtagaaaat gacagcttca   360
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<213>  Homo sapiens

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<223>  genomic DNA, Exon from 206 to 283

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cacaggatag tagagctctg atgtggtgcc attttcccca cattgctagt tcaaatgaat   360
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<212>  DNA
<213>  Homo sapiens

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<223>  genomic DNA, Exon from 165 to 245

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<210>  7
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<212>  DNA
<213>  Homo sapiens
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<220>
<221> misc_feature
<223> genomic DNA, Exon from 133 to 264

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<213> Homo sapiens

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agaagtggta agctggagca gctgggattg agagttacca gaaaaacagg aaacccttga    300
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<210> 9
<211> 448
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<213> Homo sapiens

<220>
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<223> genomic DNA, Exon from 162 to 247

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caaactggta gaagtgaatg gagtttcagt tgagggactg gaccctgaac aagtgatcca    240
tattctggta aatcttcttt ttgccttttt gttaatgact tggagaaatg ccaaggctga    300
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<210> 10
<211> 384
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 158 to 229

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aataatccta tcctttgtac tgtgttggac ctggattcaa gactgtgttg gatatttttc   360
aatactgatg gcccgagaag caaa   384

<210> 11
<211> 448
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 138 to 334

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cagggctgaa ccatcaggaa acaaaatgtt tttcttgggt ttctgttacc tcaagatgag   420
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<211> 320
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 152 to 216

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gaggctggcc atgccacatg   320

<210> 13
<211> 320
<212> DNA
<213> Homo sapiens

<220>
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<223> genomic DNA, Exon from 161 to 178

<400> 13

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cttttatcc cccctgcttc aatcatttgc ttgtactcag caatttctat ggaagaaggt     180
aagaaatagt atttaggaaa aaactcttat ctccaaagtc ttttagaaat ttcttgtagt     240
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<210> 14
<211> 384
<212> DNA
<213> Homo sapiens

<220>
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<223> genomic DNA, Exon from 179 to 217

<400> 14

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<210> 15
<211> 320
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 110 to 130

<400> 15

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<210> 16
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<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 174 to 188

<400> 16

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<213>   Homo sapiens

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<221>   misc_feature
<223>   genomic DNA, Exon from 170 to 211

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<213>   Homo sapiens

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<210>   19
<211>   384
<212>   DNA
<213>   Homo sapiens

<220>
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<223>   genomic DNA, Exon from 160 to 240

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cacatctgat gatttctgtg tgtgactttt tgtgtttagg accctctggt gttggagtaa   180
atgagctcag aagacaactt attgaattta atcccagcca ttttcaaagt gctgtgccac   240
gtatgtttag ttctgctttc ataatggttt gtgttttggt aaaactttct ttgctgatct   300
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agtatttcta accatattta tttt   384

<210>   20
<211>   448
<212>   DNA
<213>   Homo sapiens

<220>
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<223> genomic DNA, Exon from 200 to 293

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agatatcttt attcaaatgc atattggtaa tcaaagaatt ctgaagacac tgaaaccttt   180
cattcccttt ttctgataga cactactcgt actaaaaaga gttacgaaat gaatgggcgt   240
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<210> 21
<211> 448
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 133 to 241

<400> 21
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ctgctcttgc aggatgctgg agtatggtga gtacaaaggc cacctgtatg gcactagtgt   180
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ggaaagaagt cttgcttctc agacagaa   448

<210> 22
<211> 448
<212> DNA
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<220>
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<400> 22
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aaaacaaaca aaaataaat gtgcatttaa attttctgtg taggatattc aaggggttcg   180
aacccatgaa ctgaagccct atgtcatatt tataaagcca tcgaatatga ggtgtatgaa   240
acaatctcgg aaaaatgcca aggttattac tgactactat gtggacatga agttcaaggt   300
aagagcaagt caaaaactac tgtattgctt tcagtggctt ctgcgtggga gagatctggg   360
ttgggctggg ccaaggatct ctgatctcat tgtcctcctc ctcctttttg accccctctc   420
caaaaggccc tcaataaaat ggtttact   448

<210> 23
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<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 197 to 704

<400> 23

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acagcataac aaactgtatt ttttccattt gtccaattaa gtctgtacta tccatatttt   180
tctatttctc ctaaaggatg aagacctaca agagatggaa aatttagccc aaagaatgga   240
aactcagttt ggccaatttt ttgatcatgt gattgtgaat gacagcttgc acgatgcatg   300
tgcccagttg ttgtctgcca tacagaaggc tcaggaggag cctcagtggg taccagcaac   360
atggatttcc tcagatactg agtctcaatg agacttcttg tttaatgctg gagttttaac   420
actgtaccct tgatacagcg atccatagtt gcaatctaaa acaacagtat ttgacccatt   480
ttaatgtgta caactttaaa agtgcagcaa tttattaatt aatcttattt gaaaaaaatt   540
tttattgtat ggttatgtgg ttacctattt taacttaatt ttttttcctt tacctcatat   600
gcagctgtgg tagaaatatg aataatgtta agtcactgag tatgagaacc tttcgcagat   660
ttcacatgat ctttttaaga tttaaataaa gagctttcct aaat                    704
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<210> 24
<211> 637
<212> PRT
<213> Homo sapiens

<400> 24

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Lys Leu Ser Thr Ala Thr Asn Pro Gln Asn Gly Leu Ser Gln Ile Leu
                20                  25                  30
Arg Leu Val Leu Gln Glu Leu Ser Leu Phe Tyr Ser Arg Asp Val Asn
                35                  40                  45
Gly Val Cys Leu Leu Tyr Asp Leu Leu His Ser Pro Trp Leu Gln Ala
        50                  55                  60
Leu Leu Lys Ile Tyr Asp Cys Leu Gln Glu Phe Lys Glu Lys Lys Leu
65                  70                  75                  80
Val Pro Ala Thr Pro His Ala Gln Val Leu Ser Tyr Glu Val Val Glu
                85                  90                  95
Leu Leu Arg Glu Thr Pro Thr Ser Pro Glu Ile Gln Glu Leu Arg Gln
                100                 105                 110
Met Leu Gln Ala Pro His Phe Lys Ala Leu Leu Ser Ala His Asp Thr
        115                 120                 125
Ile Ala Gln Lys Asp Phe Glu Pro Leu Leu Pro Pro Leu Pro Asp Asn
        130                 135                 140
Ile Pro Glu Ser Glu Glu Ala Met Arg Ile Val Cys Leu Val Lys Asn
145                 150                 155                 160
Gln Gln Pro Leu Gly Ala Thr Ile Lys Arg His Glu Met Thr Gly Asp
                165                 170                 175
Ile Leu Val Ala Arg Ile Ile His Gly Gly Leu Ala Glu Arg Ser Gly
                180                 185                 190
Leu Leu Tyr Ala Gly Asp Lys Leu Val Glu Val Asn Gly Val Ser Val
        195                 200                 205
Glu Gly Leu Asp Pro Glu Gln Val Ile His Ile Leu Ala Met Ser Arg
        210                 215                 220
Gly Thr Ile Met Phe Lys Val Val Pro Val Ser Asp Pro Pro Val Asn
225                 230                 235                 240
Ser Gln Gln Met Val Tyr Val Arg Ala Met Thr Glu Tyr Trp Pro Gln
                245                 250                 255
Glu Asp Pro Asp Ile Pro Cys Met Asp Ala Gly Leu Pro Phe Gln Lys
                260                 265                 270
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Gly Asp Ile Leu Gln Ile Val Asp Gln Asn Asp Ala Leu Trp Trp Gln
        275                 280             285
Ala Arg Lys Ile Ser Asp Pro Ala Thr Cys Ala Gly Leu Val Pro Ser
        290                 295             300
Asn His Leu Leu Lys Arg Lys Gln Arg Glu Phe Trp Trp Ser Gln Pro
305                 310             315                 320
Tyr Gln Pro His Thr Cys Leu Lys Ser Thr Leu Ser Ile Ser Met Glu
                325             330                 335
Glu Glu Asp Asp Met Lys Ile Asp Glu Lys Cys Val Glu Ala Asp Glu
                340             345                 350
Glu Thr Phe Glu Ser Glu Glu Leu Ser Glu Asp Lys Glu Glu Phe Val
            355             360                 365
Gly Tyr Gly Gln Lys Phe Phe Ile Ala Gly Phe Arg Arg Ser Met Arg
        370             375             380
Leu Cys Arg Arg Lys Ser His Leu Ser Pro Leu His Ala Ser Val Cys
385                 390             395                 400
Cys Thr Gly Ser Cys Tyr Ser Ala Val Gly Ala Pro Tyr Glu Glu Val
                405             410                 415
Val Arg Tyr Gln Arg Arg Pro Ser Asp Lys Tyr Arg Leu Ile Val Leu
                420             425                 430
Met Gly Pro Ser Gly Val Gly Val Asn Glu Leu Arg Arg Gln Leu Ile
        435                 440             445
Glu Phe Asn Pro Ser His Phe Gln Ser Ala Val Pro His Thr Thr Arg
    450                 455             460
Thr Lys Lys Ser Tyr Glu Met Asn Gly Arg Glu Tyr His Tyr Val Ser
465                 470             475                 480
Lys Glu Thr Phe Glu Asn Leu Ile Tyr Ser His Arg Met Leu Glu Tyr
                485             490                 495
Gly Glu Tyr Lys Gly His Leu Tyr Gly Thr Ser Val Asp Ala Val Gln
            500             505                 510
Thr Val Leu Val Glu Gly Lys Ile Cys Val Met Asp Leu Glu Pro Gln
            515             520                 525
Asp Ile Gln Gly Val Arg Thr His Glu Leu Lys Pro Tyr Val Ile Phe
    530                 535             540
Ile Lys Pro Ser Asn Met Arg Cys Met Lys Gln Ser Arg Lys Asn Ala
545                 550             555                 560
Lys Val Ile Thr Asp Tyr Tyr Val Asp Met Lys Phe Lys Asp Glu Asp
                565             570                 575
Leu Gln Glu Met Glu Asn Leu Ala Gln Arg Met Glu Thr Gln Phe Gly
            580             585             590
Gln Phe Phe Asp His Val Ile Val Asn Asp Ser Leu His Asp Ala Cys
        595             600             605
Ala Gln Leu Leu Ser Ala Ile Gln Lys Ala Gln Glu Glu Pro Gln Trp
    610             615             620
Val Pro Ala Thr Trp Ile Ser Ser Asp Thr Glu Ser Gln
625             630             635
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<210> 25
<211> 1190
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> artificial sequence, Translation start at 48, stop at 638

<400> 25

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tttgtgcaga tgaattagtg atstccaatc ttcacagcaa agaaaattat gacaaatatt     180
ctgagcctag aggatacccca aaaggggaaa gaagcctcaa ttttgaggaa ttaaaagatt    240
ggggaccaaa aaatgttatt aagatgagta cacctgcagt caataaaatg ccacactcct     300
tcgccaactt gccattgaga tttgggagga acgttcaaga agaaagaagt gctggagcaa     360
cagccaacct gcctctgaga tctggaagaa atatggaggt gagcctcgtg agacgtgttc     420
ctaacctgcc ccaaaggttt gggagaacaa caacagccaa aagtgtctgc aggatgctga     480
gtgatttgtg tcaaggatcc atgcattcac catgtgccaa tgacttattt tactccatga     540
cctgccagca ccaagaaatc cagaatcccg atcaaaaaca gtcaaggaga ctgctattca    600
agaaaataga tgatgcagaa ttgaaacaag aaaaataaga aacctggagc ctgtccctaa     660
agctgtggcc tgtaatctac aaatggctct atagcgaaga ccacacggaa gagtagctac     720
atacacttca tcagctatgg atcatcaacg gcaattttc cttgtcagta cagctataat      780
agtatcttga aagttgtaaa aaaattaaag catatttgtt acgtaaagtt aaaatgattt     840
ttgtctgaat aaaaaaaaag cattgcaaat gctttagaaa tctctgataa tggagagaga     900
gacagaggac cctcctcact accctatata aaaatcattg gcacagttac acttaataaa     960
aaaaattaaa cagaagagca ccctgaaaaa cattatgatg gaaattaaat agtatgccag    1020
aataacatgg ttgacaaata agtgaacaag gattaaaaat cacttacaaa cgtgtttctg    1080
tacacccttt ctatcgtgtc aaatgttaat gaatctgtga tcaattgaaa tgtaaatgtc    1140
tgtgtaaaac tacaaaataa aaactcttag actttaggga gaaaagaaaa               1190
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<210>  26
<211>  256
<212>  DNA
<213>  Homo sapiens

<220>
<221>  misc_feature
<223>  genomic DNA, Exon from 1 to 185

<400>  26
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tttgtgcaga tgaattagtg atstccaatc ttcacagcaa agaaaattat gacaaatatt     180
ctgaggtaag ttttttaaat ctctctaatg tgagtagcat taattacata atattaatcc     240
taagtctaat gatttt                                                     256
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<210>  27
<211>  512
<212>  DNA
<213>  Homo sapiens

<220>
<221>  misc_feature
<223>  genomic DNA, Exon from 62 to 462

<400>  27
gggtttaaat ctgttgctta taacaacagt atgttattgt aatggtcatt tctaattata      60
gcctagagga tacccaaaag gggaaagaag cctcaatttt gaggaattaa aagattgggg     120
accaaaaaat gttattaaga tgagtacacc tgcagtcaat aaaatgccac actccttcgc     180
caacttgcca ttgagatttg ggaggaacgt tcaagaagaa agaagtgctg gagcaacagc     240
caacctgcct ctgagatctg gaagaaatat ggaggtgagc ctcgtgagac gtgttcctaa     300
cctgccccaa aggtttggga gaacaacaac agccaaaagt gtctgcagga tgctgagtga     360
tttgtgtcaa ggatccatgc attcaccatg tgccaatgac ttattttact ccatgacctg     420
ccagcaccaa gaaatccaga atcccgatca aaaacagtca aggtaaatac ctggaaacca     480
gtcaaagtgc atgggcagtt atatagaggt gg                                   512
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<210> 28
<211> 768
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 115 to 718

<400> 28

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cttgcatgct gttgttctga tgggtgacaa cattttatac tgcttacatt ttaggagact     120
gctattcaag aaaatagatg atgcagaatt gaaacaagaa aaataagaaa cctggagcct     180
gtccctaaag ctgtggcctg taatctacaa atggctctat agcgaagacc acacggaaga     240
gtagctacat acacttcatc agctatggat catcaacggc aattttttcct tgtcagtaca     300
gctataatag tatcttgaaa gttgtaaaaa aattaaagca tatttgttac gtaaagttaa     360
aatgattttt gtctgaataa aaaaaaagca ttgcaaatgc tttagaaatc tctgataatg     420
gagagagaga cagaggaccc tcctcactac cctatataaa aatcattggc acagttacac     480
ttaataaaaa aaattaaaca gaagagcacc ctgaaaaaca ttatgatgga aattaaatag     540
tatgccagaa taacatggtt gacaaataag tgaacaagga ttaaaaatca cttacaaacg     600
tgtttctgta caccctttct atcgtgtcaa atgttaatga atctgtgatc aattgaaatg     660
taaatgtctg tgtaaaacta caaaataaaa actcttagac tttagggaga aaagaaaaag     720
gcaactatga gttacctctt ttagtgtctc ctctatctac atccagaa                 768
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<210> 29
<211> 196
<212> PRT
<213> Homo sapiens

<400> 29

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Met Glu Ile Ile Ser Ser Lys Leu Phe Ile Leu Leu Thr Leu Ala Thr
1               5                   10                  15
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            20                  25                  30
Ser Asn Leu His Ser Lys Glu Asn Tyr Asp Lys Tyr Ser Glu Pro Arg
        35                  40                  45
Gly Tyr Pro Lys Gly Glu Arg Ser Leu Asn Phe Glu Glu Leu Lys Asp
    50                  55                  60
Trp Gly Pro Lys Asn Val Ile Lys Met Ser Thr Pro Ala Val Asn Lys
65                  70                  75                  80
Met Pro His Ser Phe Ala Asn Leu Pro Leu Arg Phe Gly Arg Asn Val
                85                  90                  95
Gln Glu Glu Arg Ser Ala Gly Ala Thr Ala Asn Leu Pro Leu Arg Ser
            100                 105                 110
Gly Arg Asn Met Glu Val Ser Leu Val Arg Arg Val Pro Asn Leu Pro
        115                 120                 125
Gln Arg Phe Gly Arg Thr Thr Thr Ala Lys Ser Val Cys Arg Met Leu
    130                 135                 140
Ser Asp Leu Cys Gln Gly Ser Met His Ser Pro Cys Ala Asn Asp Leu
145                 150                 155                 160
Phe Tyr Ser Met Thr Cys Gln His Gln Glu Ile Gln Asn Pro Asp Gln
                165                 170                 175
Lys Gln Ser Arg Arg Leu Leu Phe Lys Lys Ile Asp Asp Ala Glu Leu
            180                 185                 190
Lys Gln Glu Lys
            195
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<210>   30
<211>   1188
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   artificial sequence, Translation start at 347, stop at 604

<400>   30
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gagggcaggc ccttcagctc cattctcctc caaggctgca gaggggcag gaattggggg     180
tgacaggaga gctgtaaggt ctccagtggg tcattctggg cccagagatg ggtgctgaag     240
ctcccacgcc tgcctgtgaa aatggagtcc tctctcacct gggagagcca ggtgctgccc     300
cgagaaggat gcatttatgg cttcrtgaag tctttcctga cccccgatgc tgctgactat     360
agagacaaag tctcactatg ttgctcaggc tggtcttgaa ctcctggcct caagcgatcc     420
tcccacctya gcctcccaaa gwgttgggat tatagacatg agccactgca cctggccgac     480
cttgggcaag ttcttaaacc cttcaaagcc tcattttct ccaatcayaa aagggaaaga     540
tggtaatatt ttccccwcca aattcttgtc ggatgccctc acagaattga gattatgtac     600
gtaaaacacc aggtgcctaa cccggcacag agcaggaggg ctaagcgtga catccagcac     660
gtggtcagtg gaatccagta ttcctaccca cctctctagt ctcccctcca ccctctcc     720
tttcagaggc accaagctgc ttgtggtctt gtctattccc actccctgcc tgactgaaca     780
ttttctccac ctcctgatca tcagcagcag aaactggctg ctcttcctcc tgggtagaca     840
gccagactgt atttcccagc tgcccctgca gtgagatgtg gccatcggag ccagcattgg     900
ccaatggact ctgcatggga gtgacgcatg cwgcctccag gcttgtccct aaaaacctccc     960
acgtgtcctc sgcctgctct tcccacytcc aaggagcacg gcaattgtgg aagacccaga    1020
ttagtgatgg cagaaccata gatgggagga acctgggtcc ctgacttaaa gtatcatgga    1080
tttggatgtt cccttagtga gaaataaact tccattgtgt ttaagccttt atttgtttat    1140
agttggttac agcaactgcc ttcttttaat taaaacactc ctgctgct                 1188
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<210>   31
<211>   85
<212>   PRT
<213>   Homo sapiens

<400>   31
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Met Leu Leu Thr Ile Glu Thr Lys Ser His Tyr Val Ala Gln Ala Gly
1               5                   10                  15
Leu Glu Leu Leu Ala Ser Ser Asp Pro Pro Thr Ser Ala Ser Gln Ser
            20                  25                  30
Val Gly Ile Ile Asp Met Ser His Cys Thr Trp Pro Thr Leu Gly Lys
            35                  40                  45
Phe Leu Asn Pro Ser Lys Pro His Phe Ser Pro Ile Thr Lys Gly Lys
    50                  55                  60
Asp Gly Asn Ile Phe Pro Thr Lys Phe Leu Ser Asp Ala Leu Thr Glu
65                  70                  75                  80
Leu Arg Leu Cys Thr
                85
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<210>   32
<211>   560
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   genomic DNA, Exon from 101 to 460

Page 13

<400> 32
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tgttccaagg attagtcctg ctgccctgtg cccagctccc acacaacggg gtttcggggc   120
tgtggaccct gtgccaggaa aggaagggcg cagctcctgc aatgcggagc agccagggca   180
gtgggcacca ggctttagcc tcccttcctc accctacaga gggcaggccc ttcagctcca   240
ttctcctcca aggctgcaga gggggcagga attgggggtg acaggagagc tgtaaggtct   300
ccagtgggtc attctgggcc cagagatggg tgctgaagct cccacgcctg cctgtgaaaa   360
tggagtcctc tctcacctgg gagagccagg tgctgccccg agaaggatgc atttatggct   420
tcatgaagtc tttcctgacc cccgatgctg ctgactatag gtaagtctga gcaaatctgg   480
gggagcctca tcttggcatg agaaagagat ggcttcttct aagcccactg gccgtgatcc   540
caggattata acacattctg   560

<210>   33
<211>   405
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   genomic DNA, Exon from 101 to 305

<400>   33
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gctcaggctg gtcttgaact cctggcctca agcgatcctc ccaccttagc ctcccaaaga   180
gttgggatta tagacatgag ccactgcacc tggccgacct tgggcaagtt cttaaaccct   240
tcaaagcctc attttttctcc aatcataaaa gggaaagatg gtaatatttt cccctccaaa   300
ttcttgtaag tattaaacat tgtatatgta ttttgaacac gattaagctc taaacacttg   360
ttaggaagca ggagtagcat ttgaaacaaa cagctctttt cccac   405

<210>   34
<211>   821
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   genomic DNA, Exon from 101 to 721

<400>   34
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gcaggagtag catttgaaac aaacagctct tttcccacag gtcggatgcc ctcacagaat   120
tgagattatg tacgtaaaac accaggtgcc taacccggca cagagcagga gggctaagcg   180
tgacatccag cacgtggtca gtggaatcca gtattcctac ccacctctct agtctcccct   240
ccacccctct ccctttcaga ggcaccaagc tgcttgtggt cttgtctatt cccactccct   300
gcctgactga acattttctc cacctcctga tcatcagcag cagaaactgg ctgctcttcc   360
tcctgggtag acagccagac tgtatttccc agctgcccct gcagtgagat gtggccatcg   420
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<210>   35
<211>   1514

<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   artificial sequence, Translation start at 155, stop at 1192

<400>   35
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catagatacc ctacgaaccc caaatgccag ctgcatgaga aaagggactc accttctggt   180
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gagtctcctg ctcaactact atgtgggcct ggacctggaa cgccgggacc agcgggggct   600
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gaggattcgg cagctgctga ggcggcccca agtggagcag cttagccagc actacaagcc   780
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cactgcctgc cacactctgt gccctgacca tccaccttcg ctgggcaccc gaagcaagtc  1020
cgtgccagag ctgttagtgc cagccgaagc ccagtccttc aggacaccaa agtctggccc  1080
ttcctctctg gcgataccag gagctcagga tagagaagag gaaacaggag gaggaggcca  1140
gaatggcaca gaagtagggg aagatgggat aggacaggct gggaacaggt aatcaggccc  1200
ctcccagggc ttctttcccc tctggagtgc ctccggcctc cccatccacc tctgcctaag  1260
taaatctgct ctcaacctat atatatacaa ggtcattcat tctagcattg tttgcaagag  1320
tgaaagagtg gaaacacccg aagtgtccat cagtaaggga caggctagat tgattacgga  1380
tgtaattgct gtccatccat acagagcata ctctacagtg tattctaaaa taagactaag  1440
gaagctgttt atattctgat atgaaactac catcaagatg tataaagtaa aaataactaa  1500
ggagtggaac agtg                                                    1514
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<210>   36
<211>   1544
<212>   DNA
<213>   Homo sapiens

<220>
<221>   misc_feature
<223>   artificial sequence, Translation start at 155, stop at 1222

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catagatacc ctacgaaccc caaatgccag ctgcatgaga aaagggactc accttctggt   180
tccctgcctg gaagaggaag agctggcatt gcacaggaga cggctggaca tgtctgaggc   240
actgccctgc ccgggcaagg agacccccac cccaggctgc aggctggggg ccctgtattg   300
ggcctgtgtc cacaatgatc ccacccagct ccaagccata ctggatggtg gggtctcccc   360
agaggaggcc acccaggtgg acagcaatgg gaggacaggc ctcatggtcg catgctacca   420
cggcttccag agtgttgtgg ccctgctcag ccactgtcct ttccttgatg tgaaccagca   480
ggacaaagga ggggacacgg ccctcatgtt ggctgcccaa gcaggccacg tgcctctagt   540
gagtctcctg ctcaactact atgtgggcct ggacctggaa cgccgggacc agcgggggct   600
cacggcgtta atgaaggctg ccatgcggaa ccgctgtgag tgcgtggcca ccctcctcat   660
ggcaggtgct gacctgacag cagtggaccc tgttcggggc aagacggccc tggaatgggc   720
agtgctgacc gacagcttcg acaccgtgtg gaggattcgg cagctgctga ggcggcccca   780
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agtggagcag cttagccagc actacaagcc cgagtggccg gccttgtccg ggctcgtggc    840
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gagcctcccc tttgccccgt ctcctcagga ggggggtgtt ctggaccacc ttgtgactgc    960
cacaaccagc ctggccagtc ccttcgtcac cactgcctgc cacactctgt gccctgacca   1020
tccaccttcg ctgggcaccc gaagcaagtc cgtgccagag ctgttagtgc cagccgaagc   1080
ccagtccttc aggacaccaa agtctggccc ttcctctctg gcgataccag gagctcagga   1140
tagagaagag gaaacaggag gaggaggcca gaatggcaca gaagtagggg aagatgggat   1200
aggacaggct gggaacaggt aatcaggccc ctcccagggc ttctttcccc tctggagtgc   1260
ctccggcctc cccatccacc tctgcctaag taaatctgct ctcaacctat atatatacaa   1320
ggtcattcat tctagcattg tttgcaagag tgaaagagtg gaaacaccg aagtgtccat   1380
cagtaaggga caggctagat tgattacgga tgtaattgct gtccatccat acagagcata   1440
ctctacagtg tattctaaaa taagactaag gaagctgttt atattctgat atgaaactac   1500
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<210> 37
<211> 345
<212> PRT
<213> Homo sapiens

<400> 37

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Met Arg Lys Gly Thr His Leu Leu Val Pro Cys Leu Glu Glu Glu Glu
1               5                   10                  15
Leu Ala Leu His Arg Arg Arg Leu Asp Met Ser Glu Ala Leu Pro Cys
                20                  25                  30
Pro Gly Lys Glu Thr Pro Thr Pro Gly Cys Arg Leu Gly Ala Leu Tyr
            35                  40                  45
Trp Ala Cys Val His Asn Asp Pro Thr Gln Leu Gln Ala Ile Leu Asp
        50                  55                  60
Gly Gly Val Ser Pro Glu Glu Ala Thr Gln Val Asp Ser Asn Gly Arg
65                  70                  75                  80
Thr Gly Leu Met Val Ala Cys Tyr His Gly Phe Gln Ser Val Val Ala
                85                  90                  95
Leu Leu Ser His Cys Pro Phe Leu Asp Val Asn Gln Gln Asp Lys Gly
            100                 105                 110
Gly Asp Thr Ala Leu Met Leu Ala Ala Gln Ala Gly His Val Pro Leu
        115                 120                 125
Val Ser Leu Leu Leu Asn Tyr Tyr Val Gly Leu Asp Leu Glu Arg Arg
    130                 135                 140
Asp Gln Arg Gly Leu Thr Ala Leu Met Lys Ala Ala Met Arg Asn Arg
145                 150                 155                 160
Cys Ala Asp Leu Thr Ala Val Asp Pro Val Arg Gly Lys Thr Ala Leu
                165                 170                 175
Glu Trp Ala Val Leu Thr Asp Ser Phe Asp Thr Val Trp Arg Ile Arg
            180                 185                 190
Gln Leu Leu Arg Arg Pro Gln Val Glu Gln Leu Ser Gln His Tyr Lys
        195                 200                 205
Pro Glu Trp Pro Ala Leu Ser Gly Leu Val Ala Gln Ala Gln Ala Gln
    210                 215                 220
Ala Gln Val Ala Pro Ser Leu Leu Glu Arg Leu Gln Ala Thr Leu Ser
225                 230                 235                 240
Leu Pro Phe Ala Pro Ser Pro Gln Glu Gly Gly Val Leu Asp His Leu
                245                 250                 255
Val Thr Ala Thr Thr Ser Leu Ala Ser Pro Phe Val Thr Thr Ala Cys
            260                 265                 270
His Thr Leu Cys Pro Asp His Pro Pro Ser Leu Gly Thr Arg Ser Lys
        275                 280                 285
Ser Val Pro Glu Leu Leu Val Pro Ala Glu Ala Gln Ser Phe Arg Thr
    290                 295                 300
```

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Pro Lys Ser Gly Pro Ser Ser Leu Ala Ile Pro Gly Ala Gln Asp Arg
305             310             315             320
Glu Glu Glu Thr Gly Gly Gly Gly Gln Asn Gly Thr Glu Val Gly Glu
                325             330             335
Asp Gly Ile Gly Gln Ala Gly Asn Arg
            340             345
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<210> 38
<211> 355
<212> PRT
<213> Homo sapiens

<400> 38
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Met Arg Lys Gly Thr His Leu Leu Val Pro Cys Leu Glu Glu Glu Glu
1               5               10              15
Leu Ala Leu His Arg Arg Arg Leu Asp Met Ser Glu Ala Leu Pro Cys
            20              25              30
Pro Gly Lys Glu Thr Pro Thr Pro Gly Cys Arg Leu Gly Ala Leu Tyr
            35              40              45
Trp Ala Cys Val His Asn Asp Pro Thr Gln Leu Gln Ala Ile Leu Asp
        50              55              60
Gly Gly Val Ser Pro Glu Glu Ala Thr Gln Val Asp Ser Asn Gly Arg
65              70              75              80
Thr Gly Leu Met Val Ala Cys Tyr His Gly Phe Gln Ser Val Val Ala
            85              90              95
Leu Leu Ser His Cys Pro Phe Leu Asp Val Asn Gln Gln Asp Lys Gly
            100             105             110
Gly Asp Thr Ala Leu Met Leu Ala Ala Gln Ala Gly His Val Pro Leu
            115             120             125
Val Ser Leu Leu Leu Asn Tyr Tyr Val Gly Leu Asp Leu Glu Arg Arg
    130             135             140
Asp Gln Arg Gly Leu Thr Ala Leu Met Lys Ala Ala Met Arg Asn Arg
145             150             155             160
Cys Glu Cys Val Ala Thr Leu Leu Met Ala Gly Ala Asp Leu Thr Ala
            165             170             175
Val Asp Pro Val Arg Gly Lys Thr Ala Leu Glu Trp Ala Val Leu Thr
            180             185             190
Asp Ser Phe Asp Thr Val Trp Arg Ile Arg Gln Leu Leu Arg Arg Pro
        195             200             205
Gln Val Glu Gln Leu Ser Gln His Tyr Lys Pro Glu Trp Pro Ala Leu
    210             215             220
Ser Gly Leu Val Ala Gln Ala Gln Ala Gln Ala Gln Val Ala Pro Ser
225             230             235             240
Leu Leu Glu Arg Leu Gln Ala Thr Leu Ser Leu Pro Phe Ala Pro Ser
            245             250             255
Pro Gln Glu Gly Gly Val Leu Asp His Leu Val Thr Ala Thr Thr Ser
            260             265             270
Leu Ala Ser Pro Phe Val Thr Thr Ala Cys His Thr Leu Cys Pro Asp
    275             280             285
His Pro Pro Ser Leu Gly Thr Arg Ser Lys Ser Val Pro Glu Leu Leu
    290             295             300
Val Pro Ala Glu Ala Gln Ser Phe Arg Thr Pro Lys Ser Gly Pro Ser
305             310             315             320
Ser Leu Ala Ile Pro Gly Ala Gln Asp Arg Glu Glu Glu Thr Gly Gly
            325             330             335
Gly Gly Gln Asn Gly Thr Glu Val Gly Glu Asp Gly Ile Gly Gln Ala
            340             345             350
Gly Asn Arg
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355

<210> 39
<211> 183
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 1 to 143

<400> 39
gaaagtccag ccatctgtta cctgcgttgc ttcctggggr gggatagtcc acctggaggc   60
attcggagac ccagtgattg tgctccgygg agcctgggct gtgccccgcg ttgactgcct   120
catagatacc ctacgaaccc caagtaagaa aaaacgacga ccctctctcc gtgagtctca   180
ctg   183

<210> 40
<211> 462
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 108 to 358
<400> 40
gggataaatg ttttccctgg ggcaagggct gtgcacttcg cagctgctgg gtcccctccc   60
taggatccag ggagacactc actactcctc tccattctgt gttttagatg ccagctgcat   120
gagaaaaggg actcaccttc tggttccctg cctggaagag gaagagctgg cattgcacag   180
gagacggctg gacatgtctg aggcactgcc ctgcccgggc aaggagaccc ccaccccagg   240
ctgcaggctg ggggccctgt attgggcctg tgtccacaat gatcccaccc agctccaagc   300
catactggat ggtgggggtct ccccagagga ggccacccag gtggacagca atgggagggt   360
gagatgtcct ggcttcccag aacagctggg ggcatctttg catccccacc acaccgtcct   420
ggcctggctc cctgagaggg gttcaggggc aatacctcct gc   462

<210> 41
<211> 308
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<223> genomic DNA, Exon from 89 to 218

<400> 41
ctctgggaca gatatgggtt tagagggtgc aaggggccct ggagtggccc aggggggaaag   60
caggggatct gagctgcccc tccctcagac aggcctcatg gtcgcatgct accacggctt   120
ccagagtgtt gtggccctgc tcagccactg tcctttcctt gatgtgaacc agcaggacaa   180
aggaggggac acggccctca tgttggctgc ccaagcaggt gtgaggctgc tgcaccccac   240
ttccgacagc cccctttga tgcagacagg gcctcagccc caccttgtt gcacggtgtt   300
ctacacca   308

<210> 42
<211> 231
<212> DNA
<213> Homo sapiens

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<220>
<221>  misc_feature
<223>  genomic DNA, Exon from 49 to 159


<400>  42
tcatcacccc ctttcctggg gaccaagctt acccttgctg ccctgcaggc cacgtgcctc      60
tagtgagtct cctgctcaac tactatgtgg gcctggacct ggaacgccgg gaccagcggg     120
ggctcacggc gttaatgaag gctgccatgc ggaaccgctg tgagtgcgtg gccaccctcc     180
tcatggcagg tgtgcggggc ctggaccggg gtgtgtggcc tccagtccct c             231


<210>  43
<211>  231
<212>  DNA
<213>  Homo sapiens


<220>
<221>  misc_feature
<223>  genomic DNA, Exon from 49 to 189


<400>  43
tcatcacccc ctttcctggg gaccaagctt acccttgctg ccctgcaggc cacgtgcctc      60
tagtgagtct cctgctcaac tactatgtgg gcctggacct ggaacgccgg gaccagcggg     120
ggctcacggc gttaatgaag gctgccatgc ggaaccgctg tgagtgcgtg gccaccctcc     180
tcatggcagg tgtgcggggc ctggaccggg gtgtgtggcc tccagtccct c             231


<210>  44
<211>  588
<212>  DNA
<213>  Homo sapiens


<220>
<221>  misc_feature
<223>  genomic DNA, Exon from 98 to 499


<400>  44
aatgtaaccc acatcagtct tgctcctaaa gaatctgccc ttccacaaat caccaacccc      60
tatcccgccc catgtcaccc cctgtgctcc ttcccaggtg ctgacctgac agcagtggac     120
cctgttcggg gcaagacggc cctggaatgg gcagtgctga ccgacagctt cgacaccgtg     180
tggaggattc ggcagctgct gaggcggccc caagtggagc agcttagcca gcactacaag     240
cccgagtggc cggccttgtc cgggctcgtg gcccaggccc aggcccaggc ccaggttgcc     300
ccttcactcc tagaacggct gcaggctacc ttgagcctcc cctttgcccc gtctcctcag     360
gagggggtg ttctggacca ccttgtgact gccacaacca gcctggccag tcccttcgtc     420
accactgcct gccacactct gtgccctgac catccacctt cgctgggcac ccgaagcaag     480
tccgtgccag agctgttagg tactgccccg ccccctcccc tggttcccca gtccccgcca     540
gggagtcccc agaggtcccc gtgggtcttc gtcccctacc agagccct               588


<210>  45
<211>  503
<212>  DNA
<213>  Homo sapiens


<220>
<221>  misc_feature
<223>  genomic DNA, Exon from 27 to 503


<400>  45
ccaaggcatc ctcatcctcc caccagtgcc agccgaagcc cagtccttca ggacaccaaa      60
gtctggccct tcctctctgg cgataccagg agctcaggat agagaagagg aaacaggagg     120
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aggaggccag aatggcacag aagtagggga agatgggata ggacaggctg ggaacaggta    180
atcaggcccc tcccagggct tctttcccct ctggagtgcc tccggcctcc ccatccacct    240
ctgcctaagt aaatctgctc tcaacctata tatatacaag gtcattcatt ctagcattgt    300
ttgcaagagt gaaagagtgg aaacacccga agtgtccatc agtaagggac aggctagatt    360
gattacggat gtaattgctg tccatccata cagagcatac tctacagtgt attctaaaat    420
aagactaagg aagctgttta tattctgata tgaaactacc atcaagatgt ataaagtaaa    480
aataactaag gagtggaaca gtg                                            503
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<210> 46
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 46
ctcacatcct tctcagcc   18

<210> 47
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<212> DNA
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<220>
<223> primer

<400> 47
gtggaatgtc agggaaatc   19

<210> 48
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<212> DNA
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<220>
<223> primer

<400> 48
tgactgcctc caggaatt   18

<210> 49
<211> 18
<212> DNA
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<220>
<223> primer

<400> 49
ttacgaaatg aatgggcg   18

<210> 50
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<220>
<223> primer

<400> 50
aggctctagg tccatgac   18

<210> 51
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 51
atgtgaaatc tgcgaaagg   19

<210> 52
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 52
cgtgccatga ctgagtac   18

<210> 53
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 53

aactgcagtg ggtaccag   18

<210> 54
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 54
tctgagccta gaggatacc   19

<210> 55
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 55
gatctcagag gcaggttg   18

<210> 56
<211> 20
<212> DNA
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<220>
<223> primer

<400> 56
tgctgtgaag attggagatc   20

<210> 57
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<220>
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<222> (24)..(35)

<223> n = inosine

<400> 57
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<210> 58
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 58
ggccacgcgt cgactagtac   20

<210> 59
<211> 20
<212> DNA
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<220>
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<400> 59
agcttgaagt ggctaaagtc   20

<210> 60
<211> 20
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<213> Artificial Sequence

<220>
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<400> 60
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<210> 61
<211> 18
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<220>
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<400> 61
tgtgccagga aaggaagg   18

<210> 62
<211> 19
<212> DNA
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<220>
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<400> 62
tagtcagcag catcggggg   19

<210> 63
<211> 21
<212> DNA
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<220>
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<400> 63
agcaagttca gcctggttaa g   21

<210> 64
<211> 18
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<220>
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<400> 64
atgttcagtc aggcaggg   18

<210> 65
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<220>
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<400> 65

ttcttgtcgg atgccctc   18

<210> 66
<211> 18
<212> DNA
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<220>
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<400> 66
cggaaccgct gtgagtgc   18

<210> 67
<211> 18
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<220>
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<400> 67
taggcagagg tggatggg   18

<210> 68
<211> 18
<212> DNA
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<220>
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<400> 68
ggccactcgg gcttgtag   18

<210> 69
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<220>
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<400> 69
gtgcaatgcc agctcttc   18

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<220>
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<400>   70
tgccaagctg ttagtgcc   18

<210>   71
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<220>
<223>   primer

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